88 | E | I, II

අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) විභාගය, 2020
கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2020
General Certificate of Education (Ord. Level) Examination, 2020

නිර්මාණකරණය හා ඉදිකිරීම් තාක්ෂණවේදය I, II
வடிவமைப்பும் நிருமாணத் தொழினுட்பவியலும் I, II
Design and Construction Technology I, II

පැය තුනයි
மூன்று மணித்தியாலம்
Three hours

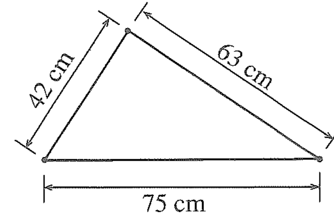
අමතර කියවීම් කාලය - මිනිත්තු 10 යි
மேலதிக வாசிப்பு நேரம் - 10 நிமிடங்கள்
Additional Reading Time - 10 minutes

Use additional reading time to go through the question paper, select the questions you will answer and decide which of them you will prioritise.

Design and Construction Technology I

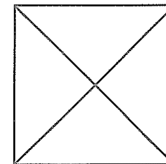
Note :
(i) *Answer all questions.*
(ii) *In each of the questions* **1** *to* **40**, *pick one of the alternatives* (1), (2), (3), (4) *which is* ***correct or most appropriate.***
(iii) ***Mark a cross*** (X) ***on the number corresponding to your choice in the answer sheet provided.***
(iv) *Further instructions are given on the back of the answer sheet. Follow them carefully.*

1. When the sides of the triangle shown in the figure are unfolded to from a straight line, the total length of it is



(1) 105cm.
(2) 117cm.
(3) 138cm.
(4) 180cm.

2. The diagonals of the shown square are joined. The number of right angled triangles formed is



(1) 2. (2) 4.
(3) 6. (4) 8.

3. "The locus of a point travelling at a uniform distance to a centre point is a circle." The most appropriate example to demonstrate this is
(1) A tyre revolving due to push.
(2) the revolving axis of a motor.
(3) The path of a bull tied to a sekku.
(4) The bucket and rope connected to a pulley of a well.

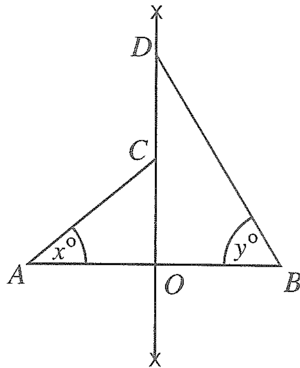
4. The internal angle of a regular polygon is 108°. What is the name of this polygon?
(1) Regular Pentagon (2) Regular Hexagon
(3) Regular Heptagon (4) Regular Octagon

[see page two

5. A thick A4 paper was folded to join the two wide ends **without** any additional activity. It will then form

(1) a part of A5 size. (2) an irregular solid.
(3) a hollow cylinder. (4) a hollow pyramid.

6. Figure shows the sketch drawn by following geometric methods in order to construct any regular polygon when base is given.



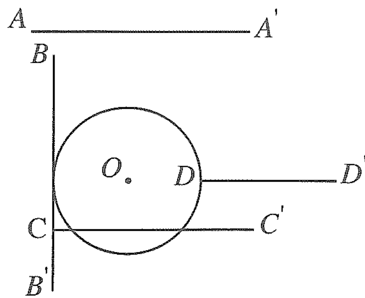
The values of angles x° and y° respectively are

(1) 30° and 60°. (2) 30° and 45°. (3) 45° and 60°. (4) 45° and 75°.

7. Several square frames were made of bamboo slats for a Vesak lantern. Due to weakness in tying up the corners, the shape of squares changed. The geometrical shape thus formed could be a

(1) Rhombus. (2) Rhomboid. (3) Rectangle. (4) Trapezium.

8. What is the line tangent to circle with centre 'O' ?



(1) A - A'. (2) B - B'. (3) C - C'. (4) D - D'.

9. What should be the property of mortar used for brickwork?

(1) Plasticity (2) Elasticity (3) Brittleness (4) Hardness

10. Slump cone is used to test

(1) the workability of a concrete mix.
(2) the Texture and quality of soil in a construction site.
(3) whether the bricks are of correct volume.
(4) the shape of coarse aggregates in concrete mix.

11. What is the tool used to remove fine cavities on a surface being plastered?

(1) Masons Trowel (2) Moulding Trowel
(3) Float (4) Point Trowel

12. Solvent cement is

(1) a material used to paste PVC accessories.
(2) a material used to fill groves in floor tiles and wall tiles.
(3) a material used to paste cracks in plastic water tanks.
(4) a material mixed with cement for water proofing.

[see page three

13. Some construction tools are shown under A, B, C and D and their uses are given under P, Q, R and S in the table below.

Tools		Uses	
A	Plumb bob	P	Levelling Plaster
B	Straight edge	Q	Check horizontality
C	Gauge Rod	R	Check verticality
D	Engineering Level	S	Check height of brick course

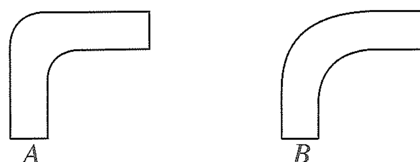
What is the option that denotes the match of using A, B, C and D tools with their uses?

(1) P, Q, R, S (2) P, R, Q, S (3) R, P, S, Q (4) R, S, P, Q

14. To test the quality of cement, a sample of cement dissolved in water was filled into a glass bottle and kept sealed for 14 days. If the glass bottle was cracked on inspection after 14 days, it means

(1) the cement is of good quality.
(2) the cement has started to set due to exposure to air.
(3) Clinker used for manufacture of cement is well ground.
(4) there are impurities in clinker used for manufacture of cement.

15. Figures *A* and *B* show two pipe fittings used to change direction of a pipe line by 90°.



The correct statement about the two fittings is

(1) both *A* and *B* provide a smooth flow.
(2) fitting *A* provides a smooth flow while fitting *B* causes water hammer.
(3) fitting *A* causes water hammer while fitting *B* gives a smooth flow.
(4) fitting *A* is used for above ground installations and fitting *B* for underground installations.

16. Pieces of roots and twigs were seen in clay mixed for brick making. The bricks moulded and burnt out of the clay

(1) will show improved physical properties of bricks.
(2) will be well burnt.
(3) will be unburned bricks.
(4) will have cavities in bricks.

17. What is the most important aspect that a technician should often consider in performing a work?

(1) Care of materials (2) Complete the task early
(3) Use best quality materials (4) Personal safety

18. Cement mouldings made by pouring cement mortar into moulds are used in brick decoration work. What is the best method of fixing such mouldings to a plastered wall?

(1) use a cement, lime, sand mix (2) use cement, sand mix
(3) use hydrated cement (4) use cement slurry

19. The brick bond which shows alternate stretchers and headers at the front view on the same course is.

(1) English Bond. (2) Header Bond.
(3) Stretcher Bond. (4) Flemish Bond

[*see page four*

20. In concreting a construction structure the concrete is laid in pre prepared form work where reinforcement is already placed. Concreting in this method is called

(1) depositing. (2) compacting. (3) curing. (4) filling.

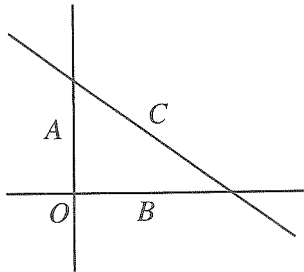
21. In the production of concrete two types of aggregates are used in addition to the binding material. What are the two types of aggregates?

(1) graded aggregates and coarse aggregates
(2) graded aggregates and fine aggregates
(3) fine aggregates and coarse aggregates
(4) fine aggregates and irregular aggregates

22. What is the pipe fitting required for obtaining a 20mm branch supply to a intermediate point from diameter of 32mm PVC pipe?

(1) Socket (2) Reducing T
(3) Reducing bend (4) Bend

23. Figure shows centre line setting out drawn to form a right angle corner in construction buildings.



$A : B : C$ are proportional to

(1) 1 : 2 : 3. (2) 3 : 4 : 5. (3) 3 : 2 : 1. (4) 5 : 4 : 3.

24. 'Rubble' is used for

(1) construction of stretcher bond walls. (2) construction of Random rubble work.
(3) Reinforced concrete. (4) Plain concrete.

25. The load on a building imposed by roof and ceiling etc. is called

(1) Live load. (2) Dead load.
(3) Environmental load. (4) Timber load.

26. In fitting a door sash, if a long bar cramp is not available it could be performed by

(1) Moulding. (2) Rebating.
(3) Grooving. (4) Dowelling.

27. What is the timber that require most effort for timber sawing?

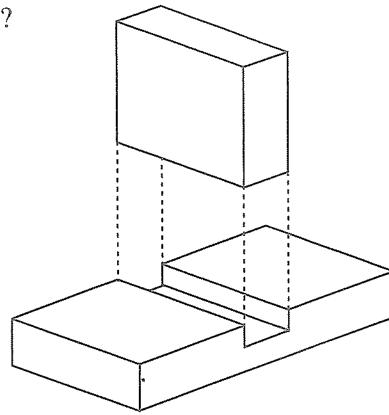
(1) Satin (2) Sandal
(3) Iron wood (Na) (4) Milla

28. The property considered in classification of tools and equipment is,

(1) Use (2) Production quality
(3) Efficiency (4) Brand name

[see page five

29. What is the name of the timber Joint shown in the figure?
(1) Closed housing Joint.
(2) Stopped housing Joint.
(3) Through housing Joint.
(4) Dovetail housing Joint.



30. Which of the following is an environmental load?
(1) Wall plates of roof (2) People living in the house
(3) Corrosion (4) Snowing

31. Select the choice which has only wood finishing tools/equipments.
(1) Smoothing plane, rasp, scraper, sand paper
(2) Trying plane, half round file, scraper, sand paper
(3) Spoke shave, rasp, half round file, scraper
(4) Rebate plane, scraper, sand paper, rasp

32. The first thing that a technician getting ready to make a timber item should do is
(1) providing necessary timber. (2) sharpening necessary tools.
(3) deciding selling price. (4) preparing technical drawing.

33. What is the timber defect caused by effect of blowing wind?
(1) Cup shake (2) Twist (3) Knots (4) Star shake

34. What is the most suitable timber joint used for making a window sash?
(1) Dovetail Joint (2) Rebate Joint
(3) Mortice and tenon Joint with rebate (4) Half lap Joint

35. What is the main difference between a rip saw and a cross cut saw?
(1) shape of the saw handle (2) shape of saw teeth
(3) Number of teeth per inch (4) length of the saw blade

36. The main factor which decide the shape of a roof is
(1) location of the building. (2) number of slopes. (sides)
(3) roofing material. (4) material used for walls.

37. Sequential order of planeing a plank is planing the
(1) edge, surface, width, thickness. (2) surface, width, edge, thickness.
(3) width, thickness, surface, edge. (4) surface, edge, thickness, width.

38. What is the filling agent out of the following?
(1) Varnish (2) Sanding sealer (3) Enamel paint (4) Wood Finish

39. In setting out an alligator Jaw scarf Joint its Length is decided as
(1) three times the width of beam. (2) three times the height of beam.
(3) length of joining members. (4) location of the joint.

40. What is the first plane used for planing timber?
(1) Smoothing Plane (2) Jack Plane
(3) Rebate Plane (4) Trying plane

[*see page six*

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இலங்கைப் பரீட்சைத் திணைக்களம்
Department of Examinations, Sri Lanka

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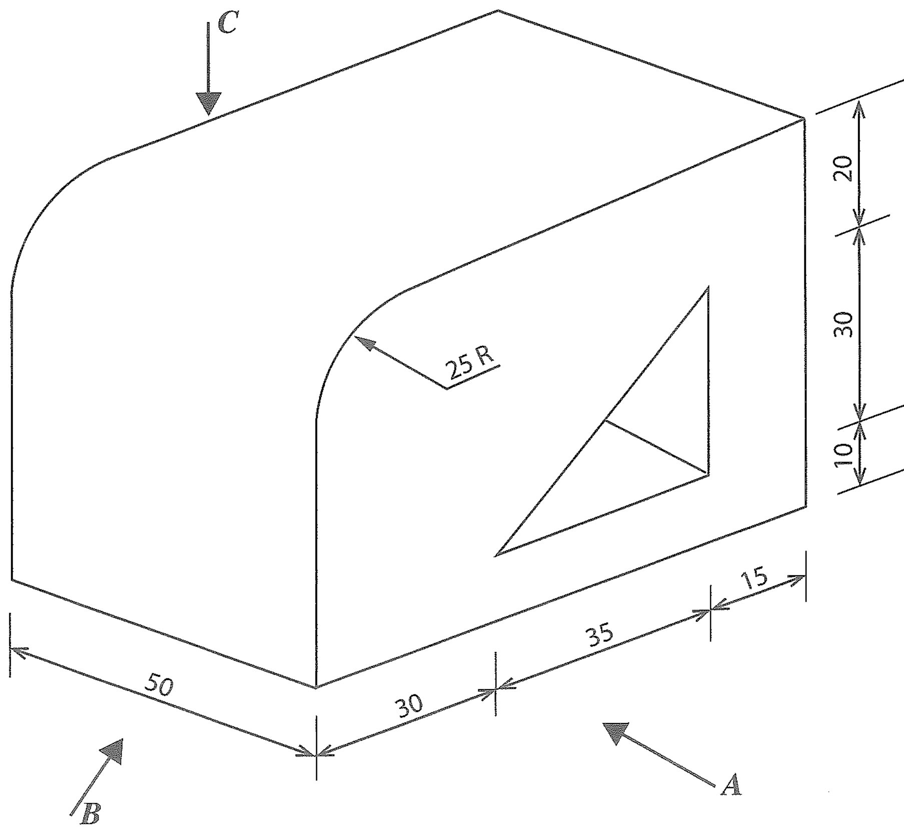
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வடிவமைப்பும் நிருமாணத் தொழினுட்பவியலும் I, II
Design and Construction Technology I, II

Design and Construction Technology II

* *Answer **five** questions selecting the **first** question and **four** others.*
* *Question No.**1** carries **20** marks and each of the other questions carry **10** marks each.*

1. (i) Isometric view of an object is shown in the figure.



(All dimensions are in millimetres.)

According to the isometric figure given above, draw

Front, elevation seen through direction of arrow ***A***,

Side, elevation seen through direction of arrow ***B***,

Plan, seen through direction of arrow ***C***,

using third angle orthographic projection principles to a scale of 1:1 as per the dimensions.

(ii) Draw a circle of radius 30 mm and divide the circumference into **five** equal ports. Construction lines should be clearly shown.

[see page seven

2. Brick walls are widely used in the construction industry.

(i) Mention the standard dimensions of a brick according to Sri Lanka Standards.

(ii) Briefly describe **two** characteristic features that could be observed in the front elevation of Stretcher Bond.

(iii) Draw the front elevation of a wall built in English Bond and name the following parts.

a. Over lap

b. Horizontal joints

c. Plumb joints

3. Plumbing can be performed efficiently and accurately as various accessories for PVC pipes are easily available.

(i) Mention the accessory fixed to lower end of suction pipe in pumping water from a well.

(ii) Mention **four** advantages of using PVC pipes over Galvanized Iron (G.I.) pipes.

(iii) Write one occasion each for the usage of following plumbing accessories in laying pipes.

1. Socket
2. Reducing Socket
3. Faucet Socket
4. T Socket
5. Bend

4. Various types of Joints are used to connect timber parts together. The timber joints are classified according to their use.

(i) Name **two** types of lengthening joints.

(ii) Name **two** types of dovetailed joints and mention **two** common characteristics of them.

(iii) Name a type of widening joint which is used to increase the width and draw its sketch.

5. Aluminium fabrication can be identified as a developmental change in construction industry.

(i) Mention **two** advantages of aluminium over timber.

(ii) Describe briefly **two** assembling methods in aluminium fabrication.

(iii) Mention **three** tools or equipment used in aluminium fabrication and briefly describe one function each of them separately.

6. Proper finishing to a timber product gives it good appearance as well as preservation.

(i) Mention **two** laminates used for plywood and Mild density fibre (M.D.F) board.

(ii) Mention **four** colouring agents used to colour timber.

(iii) Describe briefly the sequential steps followed in finishing a timber product.

7. A brick wall 4 m long, 2 m high and one brick thick bond is to be built in English Bond. Calculate the expenditure for bricks to build the above wall including wastage and transport of bricks using following information.

- 120 bricks are required to build one square metre of one brick thick wall.
- Wastage in transport and usage of bricks is 5%.
- Cost of 1000 bricks (including loading, unloading and transport) is Rs. 2500.00.

* * *